

UNITED STATES NAVAL OBSERVATORY

CIRCULAR NO. 20

U. S. Naval Observatory, Washington 25, D. C.

June 6, 1950

EPHEMERIDES OF JUNO, PALLAS, AND CERES, 1951

This *Circular* contains ephemerides of Juno, Pallas, and Ceres, for the year 1951, for the period during which they transit the meridian when the Sun is below the horizon, between latitudes 56° North and 34° South. Ephemerides of these three planets, and of Vesta, have previously appeared in *Circulars* 5, 7, and 18. Hereafter they will be published in the *American Ephemeris* and in the *British Nautical Almanac*.

The geocentric ephemerides have been calculated in the British Nautical Almanac Office, from heliocentric rectangular coordinates obtained at the Cincinnati Observatory by numerical integration, as a portion of a joint undertaking, sponsored by the Office of Naval Research, of the United States Naval Observatory, the Yale University Observatory, and the Watson Scientific Computing Laboratory. The heliocentric coordinates will be published in *Astronomical Papers of the American Ephemeris*, Volume XI, Part IV.

For details regarding the purpose and use of the ephemerides, reference should be made to the earlier *Circulars* mentioned above.

FOR 0^h UNIVERSAL TIME

Date		Apparent Right Ascension	Red. to Astrom. Place	Apparent Declination	Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
		^h ^m ^s ^s	^s	[°] ['] ["] ["]	['] ["]		["]	^h ^m
Jan.	12	15 48 41.91 + 67.31	- 2.68	-10 42 17.6 - 51.8	+0 19.0	3.808 875 -11432	2.31	8 25.0
	13	15 49 49.22 66.88	2.71	10 43 09.4 46.9	0 19.1	3.797 443 11544	2.32	8 22.2
	14	15 50 56.10 66.42	2.74	10 43 56.3 42.0	0 19.2	3.785 899 11657	2.32	8 19.3
	15	15 52 02.52 65.96	2.77	10 44 38.3 37.0	0 19.3	3.774 242 11766	2.33	8 16.5
	16	15 53 08.48 65.49	2.80	10 45 15.3 32.0	0 19.4	3.762 476 11873	2.34	8 13.7
	17	15 54 13.97 + 65.01	- 2.83	-10 45 47.3 - 27.1	+0 19.4	3.750 603 -11980	2.35	8 10.8
	18	15 55 18.98 64.53	2.85	10 46 14.4 22.2	0 19.5	3.738 623 12083	2.35	8 08.0
	19	15 56 23.51 64.03	2.88	10 46 36.6 17.2	0 19.6	3.726 540 12184	2.36	8 05.1
	20	15 57 27.54 63.53	2.91	10 46 53.8 12.2	0 19.7	3.714 356 12285	2.37	8 02.2
	21	15 58 31.07 63.01	2.94	10 47 06.0 7.2	0 19.8	3.702 071 12383	2.38	7 59.4
	22	15 59 34.08 + 62.49	- 2.97	-10 47 13.2 - 2.2	+0 19.9	3.689 688 -12478	2.39	7 56.5
	23	16 00 36.57 61.95	3.00	10 47 15.4 + 2.7	0 19.9	3.677 210 12573	2.39	7 53.6
	24	16 01 38.52 61.42	3.02	10 47 12.7 7.8	0 20.1	3.664 637 12665	2.40	7 50.7
	25*	16 02 39.94 60.86	3.05	10 47 04.9 12.8	0 20.2	3.651 972 12756	2.41	7 47.7
	26	16 03 40.80 60.30	3.08	10 46 52.1 17.9	0 20.2	3.639 216 12844	2.42	7 44.8
	27	16 04 41.10 + 59.72	- 3.11	-10 46 34.2 + 22.8	+0 20.2	3.626 372 -12931	2.43	7 41.9
	28	16 05 40.82 59.14	3.13	10 46 11.4 27.9	0 20.4	3.613 441 13016	2.44	7 38.9
	29	16 06 39.96 58.55	3.16	10 45 43.5 33.0	0 20.5	3.600 425 13099	2.44	7 36.0
	30	16 07 38.51 57.93	3.19	10 45 10.5 38.1	0 20.5	3.587 326 13179	2.45	7 33.0
	31	16 08 36.44 57.31	3.22	10 44 32.4 43.1	0 20.6	3.574 147 13258	2.46	7 30.1
Feb.	1	16 09 33.75 + 56.68	- 3.24	-10 43 49.3 + 48.3	+0 20.7	3.560 889 -13334	2.47	7 27.1
	2	16 10 30.43 56.03	3.27	10 43 01.0 53.3	0 20.7	3.547 555 13408	2.48	7 24.1
	3	16 11 26.46 55.37	3.30	10 42 07.7 58.4	0 20.8	3.534 147 13479	2.49	7 21.1
	4	16 12 21.83 54.70	3.33	10 41 09.3 63.5	0 20.9	3.520 668 13547	2.50	7 18.0
	5	16 13 16.53 54.01	3.36	10 40 05.8 68.6	0 21.0	3.507 121 13613	2.51	7 15.0
	6	16 14 10.54 + 53.32	- 3.39	-10 38 57.2 + 73.8	+0 21.0	3.493 508 -13676	2.52	7 12.0
	7*	16 15 03.86 52.60	3.42	10 37 43.4 78.8	0 21.0	3.479 832 13736	2.53	7 08.9
	8	16 15 56.46 51.88	3.45	10 36 24.6 83.8	0 21.1	3.466 096 13792	2.54	7 05.9
	9	16 16 48.34 51.14	3.48	10 35 00.8 89.0	0 21.2	3.452 304 13846	2.55	7 02.8
	10	16 17 39.48 50.40	3.50	10 33 31.8 93.9	0 21.2	3.438 458 13897	2.56	6 59.7
	11	16 18 29.88 + 49.64	- 3.53	-10 31 57.9 + 99.0	+0 21.3	3.424 561 -13944	2.57	6 56.6
	12	16 19 19.52 48.87	3.57	10 30 18.9 104.0	0 21.4	3.410 617 13989	2.58	6 53.5
	13	16 20 08.39 48.09	3.59	10 28 34.9 109.0	0 21.5	3.396 628 14030	2.59	6 50.4
	14	16 20 56.48 47.31	3.61	10 26 45.9 114.0	0 21.6	3.382 598 14070	2.60	6 47.2
	15	16 21 43.79 46.50	3.65	10 24 51.9 119.0	0 21.6	3.368 528 14106	2.61	6 44.1
	16	16 22 30.29 + 45.68	- 3.68	-10 22 52.9 + 123.9	+0 21.6	3.354 422 -14139	2.62	6 40.9
	17	16 23 15.97 44.86	3.70	10 20 49.0 128.8	0 21.8	3.340 283 14170	2.63	6 37.7
	18	16 24 00.83 44.03	3.73	10 18 40.2 133.7	0 21.8	3.326 113 14197	2.65	6 34.5
	19	16 24 44.86 43.17	3.76	10 16 26.5 138.7	0 21.8	3.311 916 14221	2.66	6 31.3
	20	16 25 28.03 42.32	3.78	10 14 07.8 143.5	0 21.8	3.297 695 14243	2.67	6 28.1
	21	16 26 10.35 + 41.44	- 3.81	-10 11 44.3 + 148.4	+0 21.9	3.283 452 -14263	2.68	6 24.9
	22*	16 26 51.79 40.57	3.83	10 09 15.9 153.2	0 22.0	3.269 189 14278	2.69	6 21.6
	23	16 27 32.36 39.67	3.87	10 06 42.7 158.1	0 22.1	3.254 911 14292	2.70	6 18.4
	24	16 28 12.03 38.76	3.90	10 04 04.6 162.9	0 22.1	3.240 619 14303	2.72	6 15.1
	25	16 28 50.79 + 37.84	3.92	10 01 21.7 + 167.7	0 22.1	3.226 316 -14310	2.73	6 11.8
	26	16 29 28.63	- 3.95	- 9 58 34.0	+0 22.2	3.212 006	2.74	6 08.5

*Lunar inequality is a maximum in Right Ascension.

Approximate Magnitude = 10.9

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension	Red. to Astrom. Place	Apparent Declination	Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h m s s	s	° ' " "	' "		"	h m
Feb. 26	16 29 28.63 + 36.91	- 3.95	- 9 58 34.0 + 172.4	+0 22.2	3.212 006 -14315	2.74	6 08.5
27	16 30 05.54 + 35.95	3.99	9 55 41.6 + 177.3	0 22.3	3.197 691 14316	2.75	6 05.2
28	16 30 41.49 + 34.99	4.01	9 52 44.3 + 182.0	0 22.3	3.183 375 14315	2.76	6 01.8
Mar. 1	16 31 16.48 + 34.02	4.04	9 49 42.3 + 186.7	0 22.3	3.169 060 14310	2.78	5 58.5
2	16 31 50.50 + 33.02	4.07	9 46 35.6 + 191.4	0 22.4	3.154 750 14301	2.79	5 55.1
3	16 32 23.52 + 32.01	- 4.10	- 9 43 24.2 + 196.1	+0 22.5	3.140 449 -14289	2.80	5 51.7
4	16 32 55.53 + 31.00	4.12	9 40 08.1 + 200.7	0 22.5	3.126 160 14274	2.81	5 48.3
5	16 33 26.53 + 29.96	4.15	9 36 47.4 + 205.3	0 22.6	3.111 886 14254	2.83	5 44.9
6	16 33 56.49 + 28.91	4.18	9 33 22.1 + 209.8	0 22.6	3.097 632 14229	2.84	5 41.4
7*	16 34 25.40 + 27.86	4.20	9 29 52.3 + 214.3	0 22.6	3.083 403 14202	2.85	5 38.0
8	16 34 53.26 + 26.78	- 4.24	- 9 26 18.0 + 218.7	+0 22.7	3.069 201 -14171	2.87	5 34.5
9	16 35 20.04 + 25.70	4.26	9 22 39.3 + 223.1	0 22.7	3.055 030 14135	2.88	5 31.0
10	16 35 45.74 + 24.60	4.29	9 18 56.2 + 227.5	0 22.8	3.040 895 14095	2.89	5 27.5
11	16 36 10.34 + 23.50	4.31	9 15 08.7 + 231.7	0 22.8	3.026 800 14052	2.91	5 24.0
12	16 36 33.84 + 22.39	4.34	9 11 17.0 + 235.9	0 22.8	3.012 748 14004	2.92	5 20.4
13	16 36 56.23 + 21.26	- 4.37	- 9 07 21.1 + 240.0	+0 22.9	2.998 744 -13952	2.93	5 16.9
14	16 37 17.49 + 20.12	4.40	9 03 21.1 + 244.2	0 23.0	2.984 792 13897	2.95	5 13.3
15	16 37 37.61 + 18.98	4.42	8 59 16.9 + 248.1	0 23.0	2.970 895 13838	2.96	5 09.7
16	16 37 56.59 + 17.83	4.45	8 55 08.8 + 252.2	0 23.1	2.957 057 13774	2.98	5 06.1
17	16 38 14.42 + 16.67	4.48	8 50 56.6 + 256.0	0 23.0	2.943 283 13708	2.99	5 02.4
18	16 38 31.09 + 15.49	- 4.51	- 8 46 40.6 + 259.8	+0 23.1	2.929 575 -13637	3.00	4 58.8
19	16 38 46.58 + 14.31	4.53	8 42 20.8 + 263.6	0 23.1	2.915 938 13562	3.02	4 55.1
20	16 39 00.89 + 13.13	4.56	8 37 57.2 + 267.2	0 23.2	2.902 376 13484	3.03	4 51.4
21*	16 39 14.02 + 11.93	4.59	8 33 30.0 + 270.9	0 23.3	2.888 892 13402	3.05	4 47.7
22	16 39 25.95 + 10.72	4.62	8 28 59.1 + 274.4	0 23.3	2.875 490 13316	3.06	4 43.9
23	16 39 36.67 + 9.51	- 4.64	- 8 24 24.7 + 277.9	+0 23.3	2.862 174 -13227	3.07	4 40.2
24	16 39 46.18 + 8.29	4.67	8 19 46.8 + 281.3	0 23.3	2.848 947 13133	3.09	4 36.4
25	16 39 54.47 + 7.06	4.69	8 15 05.5 + 284.6	0 23.4	2.835 814 13037	3.10	4 32.6
26	16 40 01.53 + 5.82	4.72	8 10 20.9 + 287.8	0 23.4	2.822 777 12935	3.12	4 28.8
27	16 40 07.35 + 4.57	4.75	8 05 33.1 + 291.0	0 23.5	2.809 842 12830	3.13	4 24.9
28	16 40 11.92 + 3.32	- 4.77	- 8 00 42.1 + 294.1	+0 23.5	2.797 012 -12721	3.15	4 21.1
29	16 40 15.24 + 2.05	4.80	7 55 48.0 + 297.1	0 23.5	2.784 291 12607	3.16	4 17.2
30	16 40 17.29 + 0.79	4.82	7 50 50.9 + 299.8	0 23.5	2.771 684 12489	3.17	4 13.3
31	16 40 18.08 + 0.49	4.85	7 45 51.1 + 302.7	0 23.6	2.759 195 12368	3.19	4 09.4
Apr. 1	16 40 17.59 + 1.78	4.88	7 40 48.4 + 305.3	0 23.6	2.746 827 12240	3.20	4 05.4
2	16 40 15.81 + 3.06	- 4.90	- 7 35 43.1 + 307.8	+0 23.7	2.734 587 -12108	3.22	4 01.5
3*	16 40 12.75 + 4.34	4.92	7 30 35.3 + 310.2	0 23.7	2.722 479 11972	3.23	3 57.5
4	16 40 08.41 + 5.64	4.95	7 25 25.1 + 312.5	0 23.7	2.710 507 11831	3.25	3 53.5
5	16 40 02.77 + 6.93	4.98	7 20 12.6 + 314.5	0 23.7	2.698 676 11686	3.26	3 49.5
6	16 39 55.84 + 8.22	5.00	7 14 58.1 + 316.6	0 23.8	2.686 990 11536	3.28	3 45.4
7	16 39 47.62 + 9.51	- 5.02	- 7 09 41.5 + 318.4	+0 23.8	2.675 454 -11381	3.29	3 41.3
8	16 39 38.11 + 10.80	5.05	7 04 23.1 + 320.1	0 23.8	2.664 073 11221	3.30	3 37.2
9	16 39 27.31 + 12.07	5.07	6 59 03.0 + 321.5	0 23.8	2.652 852 11058	3.32	3 33.1
10	16 39 15.24 + 13.36	5.10	6 53 41.5 + 323.0	0 23.9	2.641 794 10890	3.33	3 29.0
11	16 39 01.88 + 14.63	5.12	6 48 18.5 + 324.2	0 24.0	2.630 904 -10718	3.34	3 24.8
12	16 38 47.25	- 5.15	- 6 42 54.3	+0 24.0	2.620 186	3.36	3 20.6

*Lunar inequality is a maximum in Right Ascension.

Approximate Magnitude = 10.5

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension	Red. to Astrom. Place	Apparent Declination	Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h m s s	s	° ' " "	' "		"	h m
Apr. 12	16 38 47.25 - 15.89	- 5.15	- 6 42 54.3 + 325.3	+0 24.0	2.620 186 -10541	3.36	3 20.6
13	16 38 31.36 17.15	5.18	6 37 29.0 326.1	0 24.0	2.609 645 10361	3.37	3 16.4
14	16 38 14.21 18.41	5.20	6 32 02.9 326.9	0 24.0	2.599 284 10176	3.39	3 12.2
15	16 37 55.80 19.64	5.22	6 26 36.0 327.5	0 24.1	2.589 108 9988	3.40	3 08.0
16	16 37 36.16 20.87	5.24	6 21 08.5 327.9	0 24.1	2.579 120 9796	3.41	3 03.7
17	16 37 15.29 - 22.09	- 5.27	- 6 15 40.6 + 328.1	+0 24.1	2.569 324 - 9599	3.43	2 59.4
18*	16 36 53.20 23.30	5.29	6 10 12.5 328.2	0 24.1	2.559 725 9399	3.44	2 55.1
19	16 36 29.90 24.49	5.31	6 04 44.3 328.0	0 24.1	2.550 326 9196	3.45	2 50.8
20	16 36 05.41 25.68	5.34	5 59 16.3 327.8	0 24.2	2.541 130 8989	3.46	2 46.5
21	16 35 39.73 26.84	5.35	5 53 48.5 327.4	0 24.2	2.532 141 8778	3.48	2 42.1
22	16 35 12.89 - 27.99	- 5.37	- 5 48 21.1 + 326.7	+0 24.2	2.523 363 - 8564	3.49	2 37.7
23	16 34 44.90 29.14	5.40	5 42 54.4 325.9	0 24.2	2.514 799 8347	3.50	2 33.3
24	16 34 15.76 30.25	5.42	5 37 28.5 324.9	0 24.2	2.506 452 8125	3.51	2 28.9
25	16 33 45.51 31.36	5.44	5 32 03.6 323.7	0 24.3	2.498 327 7900	3.52	2 24.5
26	16 33 14.15 32.45	5.47	5 26 39.9 322.3	0 24.3	2.490 427 7672	3.53	2 20.1
27	16 32 41.70 - 33.52	- 5.49	- 5 21 17.6 + 320.8	+0 24.3	2.482 755 - 7439	3.54	2 15.6
28	16 32 08.18 34.57	5.51	5 15 56.8 318.9	0 24.3	2.475 316 7203	3.56	2 11.1
29	16 31 33.61 35.59	5.53	5 10 37.9 316.8	0 24.3	2.468 113 6964	3.57	2 06.6
30*	16 30 58.02 36.60	5.55	5 05 21.1 314.7	0 24.4	2.461 149 6720	3.58	2 02.1
May 1	16 30 21.42 37.57	5.56	5 00 06.4 312.1	0 24.4	2.454 429 6474	3.59	1 57.5
2	16 29 43.85 - 38.51	- 5.58	- 4 54 54.3 + 309.5	+0 24.5	2.447 955 - 6223	3.59	1 53.0
3	16 29 05.34 39.43	5.60	4 49 44.8 306.5	0 24.4	2.441 732 5970	3.60	1 48.4
4	16 28 25.91 40.31	5.62	4 44 38.3 303.4	0 24.4	2.435 762 5713	3.61	1 43.8
5	16 27 45.60 41.17	5.64	4 39 34.9 299.9	0 24.4	2.430 049 5454	3.62	1 39.2
6	16 27 04.43 41.99	5.66	4 34 35.0 296.4	0 24.5	2.424 595 5193	3.63	1 34.6
7	16 26 22.44 - 42.77	- 5.67	- 4 29 38.6 + 292.5	+0 24.5	2.419 402 - 4927	3.64	1 30.0
8	16 25 39.67 43.52	5.69	4 24 46.1 288.5	0 24.5	2.414 475 4661	3.64	1 25.3
9	16 24 56.15 44.23	5.71	4 19 57.6 284.2	0 24.6	2.409 814 4392	3.65	1 20.7
10	16 24 11.92 44.90	5.72	4 15 13.4 279.8	0 24.6	2.405 422 4121	3.66	1 16.0
11	16 23 27.02 45.54	5.74	4 10 33.6 275.0	0 24.5	2.401 301 3849	3.66	1 11.3
12	16 22 41.48 - 46.14	- 5.76	- 4 05 58.6 + 270.2	+0 24.6	2.397 452 - 3574	3.67	1 06.6
13	16 21 55.34 46.69	5.77	4 01 28.4 265.0	0 24.5	2.393 878 3299	3.68	1 01.9
14	16 21 08.65 47.20	5.78	3 57 03.4 259.7	0 24.6	2.390 579 3022	3.68	0 57.2
15*	16 20 21.45 47.67	5.80	3 52 43.7 254.3	0 24.6	2.387 557 2745	3.69	0 52.5
16	16 19 33.78 48.11	5.82	3 48 29.4 248.6	0 24.6	2.384 812 2466	3.69	0 47.8
17	16 18 45.67 - 48.50	- 5.83	- 3 44 20.8 + 242.8	+0 24.6	2.382 346 - 2187	3.69	0 43.1
18	16 17 57.17 48.85	5.84	3 40 18.0 236.8	0 24.6	2.380 159 1907	3.70	0 38.3
19	16 17 08.32 49.16	5.85	3 36 21.2 230.6	0 24.6	2.378 252 1627	3.70	0 33.6
20	16 16 19.16 49.42	5.86	3 32 30.6 224.2	0 24.6	2.376 625 1347	3.70	0 28.8
21	16 15 29.74 49.66	5.88	3 28 46.4 217.7	0 24.6	2.375 278 1066	3.70	0 24.1
22	16 14 40.08 - 49.84	- 5.89	- 3 25 08.7 + 211.1	+0 24.7	2.374 212 - 786	3.71	0 19.4
23	16 13 50.24 49.98	5.90	3 21 37.6 204.3	0 24.7	2.373 426 505	3.71	0 14.6
24	16 13 00.26 50.09	5.91	3 18 13.3 197.4	0 24.7	2.372 921 - 223	3.71	0 09.8
25	16 12 10.17 50.15	5.92	3 14 55.9 190.2	0 24.6	2.372 698 + 57	3.71	0 05.1
26	16 11 20.02 - 50.17	5.93	3 11 45.7 + 183.0	0 24.6	2.372 755 + 339	3.71	0 00.3
27*	16 10 29.85	- 5.94	- 3 08 42.7	+0 24.6	2.373 094	3.71	23 50.8

*Lunar inequality is a maximum in Right Ascension.

Approximate Magnitude = 10.1

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension	Red. to Astrom. Place	Apparent Declination	Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h m s s	s	° ' " "	' "		"	h m
May 27*	16 10 29.85	- 50.15	- 3 08 42.7	+ 175.6	2.373 094	+ 621	3.71 23 50.8
28	16 09 39.70	50.08	3 05 47.1	168.0	2.373 715	900	3.71 23 46.0
29	16 08 49.62	49.96	3 02 59.1	160.4	2.374 615	1181	3.71 23 41.3
30	16 07 59.66	49.81	3 00 18.7	152.5	2.375 796	1460	3.71 23 36.5
31	16 07 09.85	49.61	2 57 46.2	144.7	2.377 256	1739	3.70 23 31.7
June 1	16 06 20.24	- 49.36	- 2 55 21.5	+ 136.6	2.378 995	+ 2016	3.70 23 27.0
2	16 05 30.88	49.08	2 53 04.9	128.6	2.381 011	2291	3.70 23 22.3
3	16 04 41.80	48.74	2 50 56.3	120.3	2.383 302	2566	3.69 23 17.5
4	16 03 53.06	48.36	2 48 56.0	112.1	2.385 868	2838	3.69 23 12.8
5	16 03 04.70	47.95	2 47 03.9	103.7	2.388 706	3109	3.68 23 08.1
6	16 02 16.75	- 47.49	- 2 45 20.2	+ 95.3	2.391 815	+ 3377	3.68 23 03.3
7	16 01 29.26	46.99	2 43 44.9	86.9	2.395 192	3643	3.67 22 58.6
8	16 00 42.27	46.45	2 42 18.0	78.5	2.398 835	3906	3.67 22 53.9
9	15 59 55.82	45.87	2 40 59.5	69.9	2.402 741	4167	3.66 22 49.2
10*	15 59 09.95	45.26	2 39 49.6	61.5	2.406 908	4425	3.66 22 44.6
11	15 58 24.69	- 44.61	- 2 38 48.1	+ 53.0	2.411 333	+ 4679	3.65 22 39.9
12	15 57 40.08	43.92	2 37 55.1	44.4	2.416 012	4931	3.64 22 35.2
13	15 56 56.16	43.21	2 37 10.7	35.9	2.420 943	5179	3.64 22 30.6
14	15 56 12.95	42.45	2 36 34.8	27.5	2.426 122	5425	3.63 22 25.9
15	15 55 30.50	41.68	2 36 07.3	19.1	2.431 547	5666	3.62 22 21.3
16	15 54 48.82	- 40.87	- 2 35 48.2	+ 10.7	2.437 213	+ 5904	3.61 22 16.7
17	15 54 07.95	40.04	2 35 37.5	2.4	2.443 117	6138	3.60 22 12.1
18	15 53 27.91	39.18	2 35 35.1	- 5.9	2.449 255	6370	3.59 22 07.5
19	15 52 48.73	38.29	2 35 41.0	14.2	2.455 625	6598	3.58 22 03.0
20	15 52 10.44	37.39	2 35 55.2	22.3	2.462 223	6823	3.57 21 58.4
21	15 51 33.05	- 36.46	- 2 36 17.5	+ 30.5	2.469 046	+ 7044	3.56 21 53.9
22	15 50 56.59	35.51	2 36 48.0	38.5	2.476 090	7261	3.55 21 49.3
23*	15 50 21.08	34.53	2 37 26.5	46.6	2.483 351	7477	3.54 21 44.8
24	15 49 46.55	33.54	2 38 13.1	54.6	2.490 828	7689	3.53 21 40.3
25	15 49 13.01	32.52	2 39 07.7	62.4	2.498 517	7896	3.52 21 35.9
26	15 48 40.49	- 31.49	- 2 40 10.1	+ 70.3	2.506 413	+ 8100	3.51 21 31.4
27	15 48 09.00	30.44	2 41 20.4	78.0	2.514 513	8301	3.50 21 27.0
28	15 47 38.56	29.36	2 42 38.4	85.6	2.522 814	8498	3.49 21 22.6
29	15 47 09.20	28.27	2 44 04.0	93.3	2.531 312	8690	3.48 21 18.2
30	15 46 40.93	27.17	2 45 37.3	100.7	2.540 002	8880	3.46 21 13.8
July 1	15 46 13.76	- 26.05	- 2 47 18.0	+ 108.1	2.548 882	+ 9064	3.45 21 09.4
2	15 45 47.71	24.92	2 49 06.1	115.4	2.557 946	9245	3.44 21 05.0
3	15 45 22.79	23.77	2 51 01.5	122.6	2.567 191	9420	3.43 21 00.7
4	15 44 59.02	22.61	2 53 04.1	129.7	2.576 611	9593	3.42 20 56.4
5	15 44 36.41	21.44	2 55 13.8	136.5	2.586 204	9761	3.40 20 52.1
6	15 44 14.97	- 20.27	- 2 57 30.3	+ 143.4	2.595 965	+ 9923	3.39 20 47.9
7*	15 43 54.70	19.08	2 59 53.7	150.0	2.605 888	10082	3.38 20 43.6
8	15 43 35.62	17.89	3 02 23.7	156.6	2.615 970	10237	3.36 20 39.4
9	15 43 17.73	16.70	3 05 00.3	163.0	2.626 207	10386	3.35 20 35.2
10	15 43 01.03	- 15.49	3 07 43.3	- 169.3	2.636 593	+ 10531	3.34 20 31.0
11	15 42 45.54	- 5.97	- 3 10 32.6	+ 0 23.7	2.647 124		3.32 20 26.8

*Lunar inequality is a maximum in Right Ascension.

Approximate Magnitude = 10.1

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension	Red. to Astrom. Place	Apparent Declination	Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h m s s	s	° ' " "	' "		"	h m
July 11	15 42 45.54 - 14.29	- 5.97	- 3 10 32.6 - 175.4	+0 23.7	2.647 124 +10672	3.32	20 26.8
12	15 42 31.25 13.08	5.96	3 13 28.0 181.5	0 23.6	2.657 796 10808	3.31	20 22.7
13	15 42 18.17 11.88	5.96	3 16 29.5 187.3	0 23.7	2.668 604 10940	3.30	20 18.5
14	15 42 06.29 10.67	5.95	3 19 36.8 193.0	0 23.7	2.679 544 11068	3.28	20 14.4
15	15 41 55.62 9.46	5.94	3 22 49.8 198.5	0 23.6	2.690 612 11191	3.27	20 10.3
16	15 41 46.16 - 8.26	- 5.94	- 3 26 08.3 - 204.1	+0 23.5	2.701 803 +11311	3.26	20 06.3
17	15 41 37.90 7.07	5.94	3 29 32.4 209.3	0 23.5	2.713 114 11426	3.24	20 02.2
18	15 41 30.83 5.87	5.93	3 33 01.7 214.5	0 23.5	2.724 540 11538	3.23	19 58.2
19	15 41 24.96 4.68	5.92	3 36 36.2 219.5	0 23.5	2.736 078 11646	3.22	19 54.2
20*	15 41 20.28 3.48	5.91	3 40 15.7 224.5	0 23.4	2.747 724 11751	3.20	19 50.2
21	15 41 16.80 - 2.30	- 5.91	- 3 44 00.2 - 229.3	+0 23.3	2.759 475 +11851	3.19	19 46.2
22	15 41 14.50 - 1.12	5.90	3 47 49.5 234.0	0 23.3	2.771 326 11949	3.18	19 42.2
23	15 41 13.38 + 0.07	5.89	3 51 43.5 238.5	0 23.3	2.783 275 12042	3.16	19 38.3
24	15 41 13.45 1.24	5.90	3 55 42.0 243.0	0 23.2	2.795 317 12132	3.15	19 34.4
25	15 41 14.69 2.41	5.88	3 59 45.0 247.3	0 23.2	2.807 449 12219	3.13	19 30.5
26	15 41 17.10 + 3.59	- 5.87	- 4 03 52.3 - 251.6	+0 23.1	2.819 668 +12302	3.12	19 26.6
27	15 41 20.69 4.75	5.87	4 08 03.9 255.7	0 23.1	2.831 970 12380	3.11	19 22.8
28	15 41 25.44 5.91	5.86	4 12 19.6 259.6	0 23.1	2.844 350 12456	3.09	19 18.9
29	15 41 31.35 7.06	5.85	4 16 39.2 263.5	0 23.0	2.856 806 12526	3.08	19 15.1
30	15 41 38.41 8.22	5.84	4 21 02.7 267.2	0 23.0	2.869 332 12594	3.07	19 11.3
31	15 41 46.63 + 9.37	- 5.83	- 4 25 29.9 - 270.8	+0 23.0	2.881 926 +12658	3.05	19 07.5
Aug. 1	15 41 56.00 10.50	5.83	4 30 00.7 274.3	0 22.9	2.894 584 12717	3.04	19 03.8
2	15 42 06.50 11.63	5.82	4 34 35.0 277.7	0 22.9	2.907 301 12773	3.03	19 00.0
3	15 42 18.13 12.76	5.81	4 39 12.7 280.8	0 22.9	2.920 074 12825	3.01	18 56.3
4*	15 42 30.89 13.87	5.80	4 43 53.5 284.0	0 22.8	2.932 899 12873	3.00	18 52.6
5	15 42 44.76 + 14.99	- 5.79	- 4 48 37.5 - 286.9	+0 22.8	2.945 772 +12917	2.99	18 48.9
6	15 42 59.75 16.08	5.79	4 53 24.4 289.8	0 22.7	2.958 689 12958	2.97	18 45.2
7	15 43 15.83 17.17	5.78	4 58 14.2 292.5	0 22.6	2.971 647 12994	2.96	18 41.6
8	15 43 33.00 18.25	5.77	5 03 06.7 295.1	0 22.6	2.984 641 13028	2.95	18 37.9
9	15 43 51.25 19.33	5.76	5 08 01.8 297.6	0 22.5	2.997 669 13057	2.94	18 34.3
10	15 44 10.58 + 20.38	- 5.76	- 5 12 59.4 - 299.9	+0 22.5	3.010 726 +13084	2.92	18 30.7
11	15 44 30.96 21.43	5.75	5 17 59.3 302.2	0 22.4	3.023 810 13106	2.91	18 27.2
12	15 44 52.39 22.47	5.73	5 23 01.5 304.3	0 22.4	3.036 916 13125	2.90	18 23.6
13	15 45 14.86 23.50	5.73	5 28 05.8 306.3	0 22.3	3.050 041 13142	2.89	18 20.0
14	15 45 38.36 24.51	5.72	5 33 12.1 308.2	0 22.2	3.063 183 13156	2.87	18 16.5
15	15 46 02.87 + 25.52	- 5.71	- 5 38 20.3 - 310.0	+0 22.2	3.076 339 +13166	2.86	18 13.0
16	15 46 28.39 26.51	5.71	5 43 30.3 311.7	0 22.2	3.089 505 13174	2.85	18 09.5
17*	15 46 54.90 27.49	5.70	5 48 42.0 313.3	0 22.1	3.102 679 13180	2.84	18 06.0
18	15 47 22.39 28.47	5.69	5 53 55.3 314.8	0 22.0	3.115 859 13182	2.82	18 02.6
19	15 47 50.86 29.43	5.68	5 59 10.1 316.3	0 21.9	3.129 041 13182	2.81	17 59.1
20	15 48 20.29 + 30.39	- 5.67	- 6 04 26.4 - 317.6	+0 21.9	3.142 223 +13180	2.80	17 55.7
21	15 48 50.68 31.34	5.66	6 09 44.0 318.9	0 21.9	3.155 403 13175	2.79	17 52.3
22	15 49 22.02 32.28	5.65	6 15 02.9 320.0	0 21.9	3.168 578 13167	2.78	17 48.9
23	15 49 54.30 33.21	5.65	6 20 22.9 321.1	0 21.8	3.181 745 13156	2.77	17 45.5
24	15 50 27.51 + 34.14	5.64	6 25 44.0 - 322.0	0 21.7	3.194 901 +13143	2.75	17 42.1
25	15 51 01.65	- 5.64	- 6 31 06.0	+0 21.6	3.208 044	2.74	17 38.8

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 10.4

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension	Red. to Astrom. Place	Apparent Declination	Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h m s s	s	° ' " "	' "		"	h m
Apr. 20	20 14 03.73		+12 59 33.3	+0 03.9	3.371 275	2.61	6 24.1
21	20 14 38.71 + 34.98	3.68	13 07 35.0 + 481.7	0 03.8	3.360 042 -11233	2.62	6 20.7
22*	20 15 12.80 34.09	3.71	13 15 36.6 481.6	0 03.6	3.348 782 11260	2.63	6 17.4
23	20 15 45.98 33.18	3.73	13 23 38.0 481.4	0 03.5	3.337 497 11285	2.64	6 14.0
24	20 16 18.25 32.27	3.75	13 31 39.2 481.2	0 03.4	3.326 190 11307	2.65	6 10.6
		31.34	480.7		11329		
25	20 16 49.59	- 3.80	+13 39 39.9	+0 03.2	3.314 861	2.65	6 07.2
26	20 17 20.01 + 30.42	3.82	13 47 40.1 + 480.2	0 03.1	3.303 512 -11349	2.66	6 03.7
27	20 17 49.48 29.47	3.85	13 55 39.6 479.5	0 03.0	3.292 147 11365	2.67	6 00.3
28	20 18 18.00 28.52	3.87	14 03 38.3 478.7	0 02.8	3.280 766 11381	2.68	5 56.8
29	20 18 45.55 27.55	3.90	14 11 36.1 477.8	0 02.7	3.269 373 11393	2.69	5 53.3
		26.58	476.7		11403		
30	20 19 12.13	- 3.92	+14 19 32.8	+0 02.5	3.257 970	2.70	5 49.8
May 1	20 19 37.72 + 25.59	3.95	14 27 28.2 + 475.4	0 02.4	3.246 558 -11412	2.71	5 46.3
2	20 20 02.31 24.59	3.97	14 35 22.1 473.9	0 02.2	3.235 142 11416	2.72	5 42.8
3	20 20 25.90 23.59	4.00	14 43 14.5 472.4	0 02.1	3.223 722 11420	2.73	5 39.2
4	20 20 48.47 22.57	4.02	14 51 05.1 470.6	0 01.9	3.212 303 11419	2.74	5 35.7
		21.54	468.7		11416		
5*	20 21 10.01	- 4.05	+14 58 53.8	+0 01.8	3.200 887	2.75	5 32.1
6	20 21 30.52 + 20.51	4.07	15 06 40.3 + 466.5	0 01.6	3.189 477 -11410	2.76	5 28.5
7	20 21 49.98 19.46	4.10	15 14 24.5 464.2	0 01.4	3.178 075 11402	2.77	5 24.9
8	20 22 08.39 18.41	4.12	15 22 06.3 461.8	0 01.3	3.166 685 11390	2.78	5 21.3
9	20 22 25.74 17.35	4.15	15 29 45.4 459.1	0 01.1	3.155 309 11376	2.79	5 17.6
		16.28	456.2		11359		
10	20 22 42.02	- 4.17	+15 37 21.6	+0 01.0	3.143 950	2.80	5 14.0
11	20 22 57.23 + 15.21	4.20	15 44 54.8 + 453.2	0 00.8	3.132 612 -11338	2.81	5 10.3
12	20 23 11.35 14.12	4.23	15 52 24.8 450.0	0 00.6	3.121 297 11315	2.82	5 06.6
13	20 23 24.39 13.04	4.25	15 59 51.4 446.6	0 00.5	3.110 007 11290	2.83	5 02.9
14	20 23 36.33 11.94	4.28	16 07 14.4 443.0	0 00.3	3.098 746 11261	2.84	4 59.1
		10.84	439.2		11229		
15	20 23 47.17	- 4.30	+16 14 33.6	+0 00.2	3.087 517	2.85	4 55.4
16	20 23 56.91 + 9.74	4.33	16 21 48.8 + 435.2	0 00.0	3.076 323 -11194	2.86	4 51.6
17	20 24 05.53 8.62	4.36	16 28 59.9 431.1	-0 00.2	3.065 166 11157	2.87	4 47.8
18	20 24 13.04 7.51	4.38	16 36 06.6 426.7	0 00.4	3.054 049 11117	2.88	4 44.0
19*	20 24 19.43 6.39	4.41	16 43 08.8 422.2	0 00.5	3.042 974 11075	2.89	4 40.2
		5.26	417.5		11029		
20	20 24 24.69	- 4.44	+16 50 06.3	-0 00.7	3.031 945	2.90	4 36.3
21	20 24 28.82 + 4.13	4.46	16 56 58.8 + 412.5	0 00.9	3.020 965 -10980	2.91	4 32.4
22	20 24 31.81 2.99	4.49	17 03 46.3 407.5	0 01.0	3.010 035 10930	2.92	4 28.5
23	20 24 33.65 1.84	4.52	17 10 28.4 402.1	0 01.2	2.999 158 10877	2.93	4 24.6
24	20 24 34.35 + 0.70	4.54	17 17 05.0 396.6	0 01.4	2.988 338 10820	2.94	4 20.7
		0.46	390.8		10762		
25	20 24 33.89	- 4.57	+17 23 35.8	-0 01.6	2.977 576	2.96	4 16.8
26	20 24 32.27 - 1.62	4.60	17 30 00.7 + 384.9	0 01.8	2.966 877 -10699	2.97	4 12.8
27	20 24 29.48 2.79	4.62	17 36 19.3 378.6	0 02.0	2.956 243 10634	2.98	4 08.8
28	20 24 25.52 3.96	4.65	17 42 31.5 372.2	0 02.1	2.945 677 10566	2.99	4 04.8
29	20 24 20.39 5.13	4.68	17 48 36.9 365.4	0 02.3	2.935 183 10494	3.00	4 00.8
		6.31	358.5		10420		
30	20 24 14.08	- 4.70	+17 54 35.4	-0 02.5	2.924 763	3.01	3 56.8
31	20 24 06.60 - 7.48	4.73	18 00 26.7 + 351.3	0 02.7	2.914 422 -10341	3.02	3 52.7
June 1*	20 23 57.93 8.67	4.76	18 06 10.4 343.7	0 02.9	2.904 163 10259	3.03	3 48.6
2	20 23 48.08 9.85	4.78	18 11 46.4 336.0	0 03.1	2.893 990 10173	3.04	3 44.5
3	20 23 37.05 11.03	4.81	18 17 14.4 328.0	0 03.2	2.883 905 10085	3.05	3 40.4
		12.20	319.7		9992		
4	20 23 24.85 - 13.38	- 4.84	+18 22 34.1 + 311.2	-0 03.4	2.873 913 -9896	3.06	3 36.3
5	20 23 11.47	- 4.86	+18 27 45.3	-0 03.6	2.864 017	3.07	3 32.1

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 9.8

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension				Red. to Astrom. Place	Apparent Declination				Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h	m	s	s	s	°	'	"	"	'	"	"	h m
June 5	20	23	11.47	- 14.54	- 4.86	+18	27	45.3	+ 302.3	-0 03.6	2.864 017	- 9797	3.07 3 32.1
6	20	22	56.93	15.71	4.89	18	32	47.6	293.3	0 03.8	2.854 220	9693	3.08 3 27.9
7	20	22	41.22	16.87	4.91	18	37	40.9	283.9	0 04.0	2.844 527	9587	3.09 3 23.7
8	20	22	24.35	18.02	4.94	18	42	24.8	274.3	0 04.2	2.834 940	9477	3.10 3 19.5
9	20	22	06.33	19.16	4.96	18	46	59.1	264.6	0 04.4	2.825 463	9363	3.11 3 15.3
10	20	21	47.17	- 20.30	- 4.99	+18	51	23.7	+ 254.4	-0 04.6	2.816 100	- 9246	3.12 3 11.1
11	20	21	26.87	21.43	5.02	18	55	38.1	244.0	0 04.8	2.806 854	9126	3.14 3 06.8
12	20	21	05.44	22.54	5.04	18	59	42.1	233.5	0 05.0	2.797 728	9003	3.15 3 02.5
13	20	20	42.90	23.64	5.07	19	03	35.6	222.6	0 05.1	2.788 725	8875	3.16 2 58.2
14	20	20	19.26	24.73	5.09	19	07	18.2	211.6	0 05.3	2.779 850	8745	3.17 2 53.9
15	20	19	54.53	- 25.81	- 5.12	+19	10	49.8	+ 200.3	-0 05.5	2.771 105	- 8612	3.18 2 49.5
16*	20	19	28.72	26.87	5.14	19	14	10.1	188.8	0 05.7	2.762 493	8475	3.19 2 45.2
17	20	19	01.85	27.92	5.17	19	17	18.9	177.1	0 05.9	2.754 018	8336	3.20 2 40.8
18	20	18	33.93	28.96	5.19	19	20	16.0	165.0	0 06.1	2.745 682	8193	3.21 2 36.4
19	20	18	04.97	29.98	5.21	19	23	01.0	152.9	0 06.3	2.737 489	8049	3.21 2 32.0
20	20	17	34.99	- 30.99	- 5.24	+19	25	33.9	+ 140.4	-0 06.5	2.729 440	- 7899	3.22 2 27.5
21	20	17	04.00	31.98	5.26	19	27	54.3	127.8	0 06.7	2.721 541	7748	3.23 2 23.1
22	20	16	32.02	32.95	5.28	19	30	02.1	114.9	0 06.9	2.713 793	7594	3.24 2 18.6
23	20	15	59.07	33.91	5.31	19	31	57.0	101.7	0 07.1	2.706 199	7435	3.25 2 14.1
24	20	15	25.16	34.85	5.33	19	33	38.7	88.4	0 07.3	2.698 764	7274	3.26 2 09.6
25	20	14	50.31	- 35.76	- 5.35	+19	35	07.1	+ 74.8	-0 07.5	2.691 490	- 7109	3.27 2 05.1
26	20	14	14.55	36.65	5.37	19	36	21.9	61.0	0 07.7	2.684 381	6941	3.28 2 00.6
27	20	13	37.90	37.53	5.39	19	37	22.9	46.9	0 07.9	2.677 440	6770	3.29 1 56.1
28*	20	13	00.37	38.37	5.41	19	38	09.8	32.7	0 08.1	2.670 670	6594	3.30 1 51.5
29	20	12	22.00	39.19	5.44	19	38	42.5	18.3	0 08.2	2.664 076	6416	3.30 1 47.0
30	20	11	42.81	- 39.97	- 5.46	+19	39	00.8	+ 3.6	-0 08.4	2.657 660	- 6234	3.31 1 42.4
July 1	20	11	02.84	40.74	5.48	19	39	04.4	11.3	0 08.6	2.651 426	6050	3.32 1 37.8
2	20	10	22.10	41.46	5.50	19	38	53.1	26.2	0 08.8	2.645 376	5861	3.33 1 33.2
3	20	09	40.64	42.16	5.52	19	38	26.9	41.4	0 09.0	2.639 515	5670	3.33 1 28.6
4	20	08	58.48	42.83	5.54	19	37	45.5	56.6	0 09.2	2.633 845	5476	3.34 1 23.9
5	20	08	15.65	- 43.45	- 5.56	+19	36	48.9	- 72.0	-0 09.4	2.628 369	- 5279	3.35 1 19.3
6	20	07	32.20	44.04	5.57	19	35	36.9	87.6	0 09.5	2.623 090	5079	3.35 1 14.6
7	20	06	48.16	44.60	5.59	19	34	09.3	103.1	0 09.7	2.618 011	4876	3.36 1 10.0
8	20	06	03.56	45.12	5.61	19	32	26.2	118.9	0 09.9	2.613 135	4670	3.37 1 05.3
9	20	05	18.44	45.61	5.62	19	30	27.3	134.6	0 10.1	2.608 465	4463	3.37 1 00.6
10	20	04	32.83	- 46.05	- 5.64	+19	28	12.7	- 150.3	-0 10.2	2.604 002	- 4253	3.38 0 55.9
11	20	03	46.78	46.45	5.66	19	25	42.4	166.2	0 10.4	2.599 749	4040	3.39 0 51.2
12	20	03	00.33	46.81	5.67	19	22	56.2	182.0	0 10.6	2.595 709	3826	3.39 0 46.5
13*	20	02	13.52	47.14	5.69	19	19	54.2	197.9	0 10.8	2.591 883	3610	3.40 0 41.8
14	20	01	26.38	47.43	5.71	19	16	36.3	213.6	0 10.9	2.588 273	3391	3.40 0 37.1
15	20	00	38.95	- 47.68	- 5.72	+19	13	02.7	- 229.5	-0 11.1	2.584 882	- 3171	3.40 0 32.4
16	19	59	51.27	47.88	5.73	19	09	13.2	245.2	0 11.3	2.581 711	2950	3.41 0 27.7
17	19	59	03.39	48.05	5.75	19	05	08.0	260.8	0 11.4	2.578 761	2726	3.41 0 22.9
18	19	58	15.34	48.19	5.76	19	00	47.2	276.5	0 11.6	2.576 035	2502	3.42 0 18.2
19	19	57	27.15	48.27	5.77	18	56	10.7	292.0	0 11.7	2.573 533	2275	3.42 0 13.5
20	19	56	38.88	- 48.33	- 5.79	+18	51	18.7	- 307.6	-0 11.9	2.571 258	- 2047	3.42 0 08.7
21	19	55	50.55		- 5.80	+18	46	11.1		-0 12.1	2.569 211		3.43 0 04.9

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 9.3

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension				Red. to Astrom. Place	Apparent Declination				Red. to Astrom. Place	True Distance from Earth		Hor. Paral- lax	Transit, Meridian of Green- wich
	h	m	s	s	s	°	'	"	"	'	"		"	h m
July	21	19 55	50.55	- 48.34	- 5.80	+18 46	11.1	- 323.0		-0 12.1	2.569 211	- 1818	3.43	23 04.0
	22	19 55	02.21	48.32	5.81	18 40	48.1	338.3		0 12.2	2.567 393	1586	3.43	23 54.6
	23	19 54	13.89	48.25	5.82	18 35	09.8	353.5		0 12.3	2.565 807	1354	3.43	23 49.8
	24	19 53	25.64	48.14	5.83	18 29	16.3	368.6		0 12.5	2.564 453	1119	3.43	23 45.1
	25*	19 52	37.50	48.00	5.84	18 23	07.7	383.6		0 12.6	2.563 334	884	3.43	23 40.4
	26	19 51	49.50	- 47.80	- 5.85	+18 16	44.1	- 398.4		-0 12.8	2.562 450	- 647	3.43	23 35.6
	27	19 51	01.70	47.56	5.86	18 10	05.7	413.0		0 12.9	2.561 803	410	3.44	23 30.9
	28	19 50	14.14	47.29	5.87	18 03	12.7	427.4		0 13.0	2.561 393	- 170	3.44	23 26.2
	29	19 49	26.85	46.98	5.88	17 56	05.3	441.7		0 13.1	2.561 223	+ 69	3.44	23 21.5
	30	19 48	39.87	46.61	5.88	17 48	43.6	455.7		0 13.3	2.561 292	310	3.44	23 16.8
Aug.	31	19 47	53.26	- 46.22	- 5.89	+17 41	07.9	- 469.4		-0 13.4	2.561 602	+ 551	3.44	23 12.1
	1	19 47	07.04	45.77	5.90	17 33	18.5	482.9		0 13.5	2.562 153	792	3.43	23 07.4
	2	19 46	21.27	45.30	5.90	17 25	15.6	496.2		0 13.6	2.562 945	1034	3.43	23 02.7
	3	19 45	35.97	44.77	5.91	17 16	59.4	509.1		0 13.7	2.563 979	1276	3.43	22 58.1
	4	19 44	51.20	44.21	5.92	17 08	30.3	521.7		0 13.8	2.565 255	1517	3.43	22 53.4
	5	19 44	06.99	- 43.61	- 5.92	+16 59	48.6	- 534.1		-0 13.9	2.566 772	+ 1758	3.43	22 48.7
	6	19 43	23.38	42.98	5.93	16 50	54.5	546.0		0 14.0	2.568 530	2000	3.43	22 44.1
	7	19 42	40.40	42.31	5.93	16 41	48.5	557.7		0 14.1	2.570 530	2240	3.42	22 39.4
	8	19 41	58.09	41.60	5.93	16 32	30.8	568.9		0 14.2	2.572 770	2479	3.42	22 34.8
	9*	19 41	16.49	40.86	5.94	16 23	01.9	579.9		0 14.3	2.575 249	2718	3.42	22 30.2
	10	19 40	35.63	- 40.09	- 5.94	+16 13	22.0	- 590.4		-0 14.4	2.577 967	+ 2955	3.41	22 25.6
	11	19 39	55.54	39.29	5.94	16 03	31.6	600.6		0 14.5	2.580 922	3192	3.41	22 21.0
	12	19 39	16.25	38.46	5.95	15 53	31.0	610.4		0 14.6	2.584 114	3427	3.41	22 16.5
	13	19 38	37.79	37.60	5.95	15 43	20.6	619.9		0 14.6	2.587 541	3660	3.40	22 11.9
	14	19 38	00.19	36.72	5.95	15 33	00.7	628.8		0 14.7	2.591 201	3893	3.40	22 07.4
	15	19 37	23.47	- 35.82	- 5.95	+15 22	31.9	- 637.5		-0 14.8	2.595 094	+ 4123	3.39	22 02.8
	16	19 36	47.65	34.88	5.95	15 11	54.4	645.8		0 14.8	2.599 217	4352	3.39	21 58.3
	17	19 36	12.77	33.92	5.95	15 01	08.6	653.7		0 14.9	2.603 569	4581	3.38	21 53.8
	18	19 35	38.85	32.96	5.95	14 50	14.9	661.3		0 15.0	2.608 150	4807	3.37	21 49.4
	19	19 35	05.89	31.96	5.95	14 39	13.6	668.5		0 15.0	2.612 957	5031	3.37	21 44.9
	20	19 34	33.93	- 30.94	- 5.95	+14 28	05.1	- 675.3		-0 15.1	2.617 988	+ 5255	3.36	21 40.4
	21*	19 34	02.99	29.90	5.95	14 16	49.8	681.7		0 15.1	2.623 243	5477	3.35	21 36.0
	22	19 33	33.09	28.85	5.95	14 05	28.1	687.8		0 15.2	2.628 720	5697	3.35	21 31.6
	23	19 33	04.24	27.77	5.95	13 54	00.3	693.4		0 15.2	2.634 417	5915	3.34	21 27.2
	24	19 32	36.47	26.67	5.95	13 42	26.9	698.8		0 15.3	2.640 332	6131	3.33	21 22.8
	25	19 32	09.80	- 25.57	- 5.95	+13 30	48.1	- 703.7		-0 15.3	2.646 463	+ 6346	3.33	21 18.5
	26	19 31	44.23	24.44	5.95	13 19	04.4	708.2		0 15.4	2.652 809	6557	3.32	21 14.1
	27	19 31	19.79	23.29	5.95	13 07	16.2	712.4		0 15.4	2.659 366	6767	3.31	21 09.8
	28	19 30	56.50	22.14	5.94	12 55	23.8	716.1		0 15.4	2.666 133	6975	3.30	21 05.5
	29	19 30	34.36	20.97	5.94	12 43	27.7	719.6		0 15.4	2.673 108	7179	3.29	21 01.2
Sept.	30	19 30	13.39	- 19.79	- 5.94	+12 31	28.1	- 722.5		-0 15.5	2.680 287	+ 7381	3.28	20 57.0
	31	19 29	53.60	18.60	5.93	12 19	25.6	725.1		0 15.5	2.687 668	7581	3.27	20 52.7
	1	19 29	35.00	17.39	5.93	12 07	20.5	727.4		0 15.5	2.695 249	7777	3.27	20 48.5
	2	19 29	17.61	16.17	5.93	11 55	13.1	729.2		0 15.6	2.703 026	7970	3.26	20 44.3
	3	19 29	01.44	14.96	5.92	11 43	03.9	730.7		0 15.6	2.710 996	8161	3.25	20 40.1
	4	19 28	46.48	- 13.74	- 5.92	+11 30	53.2	- 731.8		-0 15.6	2.719 157	+ 8347	3.24	20 36.0
	5*	19 28	32.74		- 5.92	+11 18	41.4			-0 15.6	2.727 504		3.23	20 31.8

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 9.3

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension	Red. to Astrom. Place	Apparent Declination	Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h m s s	s	° ' " "	' "		"	h m
Sept. 5*	19 28 32.74 - 12.50	- 5.92	+11 18 41.4 - 732.5	-0 15.6	2.727 504 + 8532	3.23	20 31.8
6	19 28 20.24 11.27	5.91	11 06 28.9 733.0	0 15.6	2.736 036 8711	3.22	20 27.7
7	19 28 08.97 10.03	5.91	10 54 15.9 733.0	0 15.7	2.744 747 8888	3.21	20 23.6
8	19 27 58.94 8.79	5.90	10 42 02.9 732.7	0 15.7	2.753 635 9061	3.20	20 19.5
9	19 27 50.15 7.56	5.90	10 29 50.2 732.1	0 15.7	2.762 696 9231	3.19	20 15.5
10	19 27 42.59 - 6.32	- 5.90	+10 17 38.1 - 731.1	-0 15.7	2.771 927 + 9397	3.17	20 11.4
11	19 27 36.27 5.09	5.89	10 05 27.0 730.0	0 15.7	2.781 324 9560	3.16	20 07.4
12	19 27 31.18 3.85	5.88	9 53 17.0 728.4	0 15.7	2.790 884 9719	3.15	20 03.4
13	19 27 27.33 2.63	5.88	9 41 08.6 726.7	0 15.8	2.800 603 9875	3.14	19 59.4
14	19 27 24.70 1.40	5.87	9 29 01.9 724.6	0 15.8	2.810 478 10029	3.13	19 55.5
15	19 27 23.30 - 0.19	- 5.87	+ 9 16 57.3 - 722.2	-0 15.7	2.820 507 + 10177	3.12	19 51.5
16	19 27 23.11 + 1.03	5.86	9 04 55.1 719.8	0 15.7	2.830 684 10324	3.11	19 47.6
17*	19 27 24.14 2.25	5.86	8 52 55.3 716.9	0 15.8	2.841 008 10468	3.10	19 43.7
18	19 27 26.39 3.45	5.85	8 40 58.4 713.9	0 15.8	2.851 476 10608	3.09	19 39.8
19	19 27 29.84 4.65	5.85	8 29 04.5 710.7	0 15.8	2.862 084 10744	3.07	19 36.0
20	19 27 34.49 + 5.85	- 5.84	+ 8 17 13.8 - 707.1	-0 15.8	2.872 828 + 10878	3.06	19 32.1
21	19 27 40.34 7.05	5.83	8 05 26.7 703.5	0 15.8	2.883 706 11009	3.05	19 28.3
22	19 27 47.39 8.23	5.83	7 53 43.2 699.6	0 15.8	2.894 715 11135	3.04	19 24.5
23	19 27 55.62 9.41	5.82	7 42 03.6 695.4	0 15.8	2.905 850 11259	3.03	19 20.7
24	19 28 05.03 10.59	5.82	7 30 28.2 691.1	0 15.8	2.917 109 11379	3.02	19 17.0
25	19 28 15.62 + 11.76	- 5.81	+ 7 18 57.1 - 686.6	-0 15.8	2.928 488 + 11495	3.00	19 13.2
26	19 28 27.38 12.93	5.80	7 07 30.5 681.8	0 15.8	2.939 983 11608	2.99	19 09.5
27	19 28 40.31 14.08	5.79	6 56 08.7 676.9	0 15.8	2.951 591 11718	2.98	19 05.8
28	19 28 54.39 15.23	5.79	6 44 51.8 671.8	0 15.9	2.963 309 11823	2.97	19 02.1
29	19 29 09.62 16.37	5.78	6 33 40.0 666.5	0 15.9	2.975 132 11925	2.96	18 58.5
30	19 29 25.99 + 17.50	- 5.78	+ 6 22 33.5 - 661.0	-0 15.9	2.987 057 + 12023	2.95	18 54.8
Oct. 1	19 29 43.49 18.63	5.77	6 11 32.5 655.4	0 15.9	2.999 080 12117	2.93	18 51.2
2*	19 30 02.12 19.74	5.76	6 00 37.1 649.6	0 15.9	3.011 197 12207	2.92	18 47.6
3	19 30 21.86 20.84	5.76	5 49 47.5 643.7	0 15.9	3.023 404 12293	2.91	18 44.0
4	19 30 42.70 21.93	5.75	5 39 03.8 637.6	0 15.9	3.035 697 12376	2.90	18 40.4
5	19 31 04.63 + 23.02	- 5.74	+ 5 28 26.2 - 631.3	-0 16.0	3.048 073 + 12455	2.89	18 36.9
6	19 31 27.65 24.09	5.74	5 17 54.9 625.0	0 16.0	3.060 528 12529	2.88	18 33.3
7	19 31 51.74 25.14	5.73	5 07 29.9 618.5	0 16.0	3.073 057 12600	2.86	18 29.8
8	19 32 16.88 26.18	5.72	4 57 11.4 612.0	0 16.0	3.085 657 12667	2.85	18 26.3
9	19 32 43.06 27.22	5.72	4 46 59.4 605.2	0 16.0	3.098 324 12730	2.84	18 22.8
10	19 33 10.28 + 28.23	- 5.71	+ 4 36 54.2 - 598.5	-0 16.0	3.111 054 + 12791	2.83	18 19.4
11	19 33 38.51 29.24	5.71	4 26 55.7 591.6	0 16.1	3.123 845 12848	2.82	18 15.9
12	19 34 07.75 30.23	5.70	4 17 04.1 584.7	0 16.1	3.136 693 12901	2.81	18 12.5
13	19 34 37.98 31.21	5.69	4 07 19.4 577.8	0 16.1	3.149 594 12952	2.79	18 09.1
14	19 35 09.19 32.18	5.69	3 57 41.6 570.7	0 16.1	3.162 546 12998	2.78	18 05.7
15*	19 35 41.37 + 33.13	- 5.68	+ 3 48 10.9 - 563.5	-0 16.1	3.175 544 + 13043	2.77	18 02.3
16	19 36 14.50 34.08	5.67	3 38 47.4 556.4	0 16.2	3.188 587 13084	2.76	17 58.9
17	19 36 48.58 35.01	5.67	3 29 31.0 549.2	0 16.2	3.201 671 13122	2.75	17 55.5
18	19 37 23.59 35.93	5.66	3 20 23.8 541.9	0 16.2	3.214 793 13157	2.74	17 52.2
19	19 37 59.52 + 36.85	5.66	3 11 19.9 534.5	0 16.3	3.227 950 + 13188	2.73	17 48.9
20	19 38 36.37	- 5.65	+ 3 02 25.4	-0 16.3	3.241 138	2.72	17 45.6

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 9.6

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension				Red. to Astrom. Place	Apparent Declination				Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h	m	s	s		°	'	"	"				
Oct. 20	19	38	36.37		- 5.65	+	3	02	25.4	- 0 16.3	3.241 138	2.72	17 45.6
21	19	39	14.11	+ 37.74	5.65	+	2	53	38.2	0 16.3	3.254 355	2.70	17 42.3
22	19	39	52.74	38.63	5.64	+	2	44	58.5	0 16.4	3.267 597	2.69	17 39.0
23	19	40	32.26	39.52	5.64	+	2	36	26.2	0 16.4	3.280 861	2.68	17 35.7
24	19	41	12.64	40.38	5.63	+	2	28	01.4	0 16.4	3.294 145	2.67	17 32.5
				41.24					497.2		13299		
25	19	41	53.88		- 5.63	+	2	19	44.2	- 0 16.4	3.307 444	2.66	17 29.2
26	19	42	35.96	+ 42.08	5.62	+	2	11	34.7	0 16.5	3.320 756	2.65	17 26.0
27	19	43	18.89	42.93	5.61	+	2	03	32.8	0 16.6	3.334 076	2.64	17 22.8
28	19	44	02.64	43.75	5.61	+	1	55	38.5	0 16.6	3.347 403	2.63	17 19.6
29	19	44	47.20	44.56	5.61	+	1	47	52.0	0 16.6	3.360 732	2.62	17 16.4
				45.36					458.8		13328		
30*	19	45	32.56		- 5.60	+	1	40	13.2	- 0 16.7	3.374 060	2.61	17 13.2
31	19	46	18.72	+ 46.16	5.60	+	1	32	42.2	0 16.7	3.387 384	2.60	17 10.1
Nov. 1	19	47	05.65	46.93	5.59	+	1	25	18.9	0 16.8	3.400 700	2.59	17 06.9
2	19	47	53.35	47.70	5.59	+	1	18	03.5	0 16.8	3.414 004	2.58	17 03.8
3	19	48	41.81	48.46	5.58	+	1	10	55.9	0 16.9	3.427 294	2.57	17 00.7
				49.19					419.7		13272		
4	19	49	31.00		- 5.58	+	1	03	56.2	- 0 16.9	3.440 566	2.56	16 57.6
5	19	50	20.93	+ 49.93	5.58	+	0	57	04.3	0 17.0	3.453 817	2.55	16 54.5
6	19	51	11.57	50.64	5.57	+	0	50	20.2	0 17.0	3.467 044	2.54	16 51.4
7	19	52	02.91	51.34	5.57	+	0	43	43.9	0 17.1	3.480 243	2.53	16 48.3
8	19	52	54.94	52.03	5.56	+	0	37	15.5	0 17.2	3.493 413	2.52	16 45.3
				52.71					380.7		13138		
9	19	53	47.65		- 5.56	+	0	30	54.8	- 0 17.2	3.506 551	2.51	16 42.2
10	19	54	41.02	+ 53.37	5.56	+	0	24	41.9	0 17.3	3.519 654	2.50	16 39.2
11	19	55	35.05	54.03	5.55	+	0	18	36.7	0 17.3	3.532 719	2.49	16 36.2
12*	19	56	29.72	54.67	5.55	+	0	12	39.3	0 17.4	3.545 744	2.48	16 33.1
13	19	57	25.02	55.30	5.55	+	0	06	49.6	0 17.5	3.558 726	2.47	16 30.1
				55.92					342.0		12938		
14	19	58	20.94		- 5.55	+	0	01	07.6	- 0 17.6	3.571 664	2.46	16 27.1
15	19	59	17.48	+ 56.54	5.54	+	0	04	26.8	0 17.6	3.584 554	2.45	16 24.2
16	20	00	14.61	57.13	5.54	+	0	09	53.5	0 17.7	3.597 395	2.45	16 21.2
17	20	01	12.34	57.73	5.54	+	0	15	12.7	0 17.8	3.610 184	2.44	16 18.2
18	20	02	10.64	58.30	5.54	+	0	20	24.2	0 17.8	3.622 918	2.43	16 15.3
				58.88					303.9		12677		
19	20	03	09.52		- 5.54	+	0	25	28.1	- 0 17.9	3.635 595	2.42	16 12.3
20	20	04	08.97	+ 59.45	5.53	+	0	30	24.5	0 18.0	3.648 212	2.41	16 09.4
21	20	05	08.96	59.99	5.53	+	0	35	13.4	0 18.1	3.660 767	2.40	16 06.4
22	20	06	09.50	60.54	5.53	+	0	39	54.7	0 18.2	3.673 258	2.40	16 03.5
23	20	07	10.58	61.08	5.53	+	0	44	28.5	0 18.2	3.685 681	2.39	16 00.6
				61.60					266.4		12354		
24	20	08	12.18		- 5.53	+	0	48	54.9	- 0 18.3	3.698 035	2.38	15 57.7
25	20	09	14.30	+ 62.12	5.53	+	0	53	13.8	0 18.4	3.710 317	2.37	15 54.8
26	20	10	16.93	62.63	5.53	+	0	57	25.3	0 18.5	3.722 524	2.36	15 51.9
27*	20	11	20.06	63.13	5.53	+	1	01	29.4	0 18.5	3.734 653	2.36	15 49.0
28	20	12	23.68	63.62	5.52	+	1	05	26.1	0 18.6	3.746 701	2.35	15 46.2
				64.10					229.3		11966		
29	20	13	27.78		- 5.52	+	1	09	15.4	- 0 18.7	3.758 667	2.34	15 43.3
30	20	14	32.35	+ 64.57	5.52	+	1	12	57.4	0 18.8	3.770 547	2.33	15 40.4
Dec. 1	20	15	37.38	65.03	5.52	+	1	16	32.1	0 18.9	3.782 338	2.33	15 37.6
2	20	16	42.85	65.47	5.52	+	1	19	59.6	0 19.0	3.794 039	2.32	15 34.8
3	20	17	48.77	65.92	- 5.52	+	1	23	19.9	- 0 19.1	3.805 646	2.32	15 31.9
									200.3		11607		

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 9.9

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension				Red. to Astrom. Place	Apparent Declination				Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h	m	s	s		°	'	"	"				
May	26	23 04	46.71	+ 56.05	- 4.54	-16 06	03.3			-0 28.5	2.929 861	-13264	3.00 6 52.9
	27	23 05	42.76	55.32	4.57	16 04	16.1		+ 107.2	0 28.8	2.916 597	13283	3.02 6 49.9
	28	23 06	38.08	54.56	4.59	16 02	35.0		101.1	0 29.1	2.903 314	13301	3.03 6 46.9
	29	23 07	32.64	53.80	4.62	16 01	00.2		94.8	0 29.3	2.890 013	13316	3.04 6 43.8
	30	23 08	26.44	53.03	4.64	15 59	31.6		88.6	0 29.6	2.876 697	13328	3.06 6 40.8
									82.1				
June	31	23 09	19.47	+ 52.24	- 4.67	-15 58	09.5		+ 75.6	-0 29.8	2.863 369	-13339	3.07 6 37.7
	1	23 10	11.71	51.44	4.69	15 56	53.9		68.9	0 30.1	2.850 030	13345	3.09 6 34.7
	2	23 11	03.15	50.63	4.72	15 55	45.0		62.2	0 30.4	2.836 685	13351	3.10 6 31.6
	3	23 11	53.78	49.81	4.75	15 54	42.8		55.5	0 30.6	2.823 334	13352	3.12 6 28.5
	4	23 12	43.59	48.97	4.77	15 53	47.3		48.5	0 30.9	2.809 982	13352	3.13 6 25.4
	5*	23 13	32.56	+ 48.13	- 4.79	-15 52	58.8		+ 41.6	-0 31.1	2.796 630	-13349	3.15 6 22.3
	6	23 14	20.69	47.27	4.82	15 52	17.2		34.5	0 31.4	2.783 281	13342	3.16 6 19.1
	7	23 15	07.96	46.40	4.85	15 51	42.7		27.3	0 31.6	2.769 939	13333	3.18 6 16.0
	8	23 15	54.36	45.52	4.87	15 51	15.4		20.2	0 31.9	2.756 606	13321	3.19 6 12.8
	9	23 16	39.88	44.63	4.90	15 50	55.2		12.8	0 32.1	2.743 285	13306	3.21 6 09.6
	10	23 17	24.51	+ 43.72	- 4.93	-15 50	42.4		+ 5.5	-0 32.4	2.729 979	-13289	3.22 6 06.4
	11	23 18	08.23	42.81	4.96	15 50	36.9		1.9	0 32.6	2.716 690	13268	3.24 6 03.2
	12	23 18	51.04	41.88	4.98	15 50	38.8		9.4	0 32.9	2.703 422	13245	3.26 6 00.0
	13	23 19	32.92	40.95	5.01	15 50	48.2		16.9	0 33.1	2.690 177	13219	3.27 5 56.8
	14	23 20	13.87	39.99	5.04	15 51	05.1		24.6	0 33.4	2.676 958	13190	3.29 5 53.5
	15	23 20	53.86	+ 39.04	- 5.07	-15 51	29.7		- 32.3	-0 33.6	2.663 768	-13159	3.30 5 50.2
	16	23 21	32.90	38.07	5.09	15 52	02.0		40.0	0 33.9	2.650 609	13124	3.32 5 46.9
	17	23 22	10.97	37.09	5.12	15 52	42.0		47.8	0 34.1	2.637 485	13088	3.34 5 43.6
	18	23 22	48.06	36.09	5.15	15 53	29.8		55.6	0 34.4	2.624 397	13049	3.35 5 40.3
	19*	23 23	24.15	35.09	5.18	15 54	25.4		63.5	0 34.6	2.611 348	13008	3.37 5 37.0
	20	23 23	59.24	+ 34.07	- 5.21	-15 55	28.9		- 71.6	-0 34.8	2.598 340	-12963	3.39 5 33.6
	21	23 24	33.31	33.03	5.24	15 56	40.5		79.6	0 35.1	2.585 377	12916	3.40 5 30.2
	22	23 25	06.34	31.99	5.27	15 58	00.1		87.7	0 35.3	2.572 461	12866	3.42 5 26.8
	23	23 25	38.33	30.92	5.30	15 59	27.8		95.9	0 35.5	2.559 595	12814	3.44 5 23.4
	24	23 26	09.25	29.85	5.32	16 01	03.7		104.2	0 35.8	2.546 781	12758	3.46 5 20.0
	25	23 26	39.10	+ 28.75	- 5.35	-16 02	47.9		- 112.5	-0 36.0	2.534 023	-12700	3.47 5 16.6
	26	23 27	07.85	27.64	5.38	16 04	40.4		120.8	0 36.2	2.521 323	12637	3.49 5 13.1
	27	23 27	35.49	26.51	5.41	16 06	41.2		129.3	0 36.4	2.508 686	12571	3.51 5 09.6
	28	23 28	02.00	25.38	5.44	16 08	50.5		137.7	0 36.7	2.496 115	12502	3.53 5 06.1
	29	23 28	27.38	24.22	5.47	16 11	08.2		146.1	0 36.9	2.483 613	12430	3.54 5 02.6
July	30	23 28	51.60	+ 23.05	- 5.50	-16 13	34.3		- 154.7	-0 37.1	2.471 183	-12352	3.56 4 59.1
	1	23 29	14.65	21.87	5.54	16 16	09.0		163.2	0 37.3	2.458 831	12273	3.58 4 55.6
	2*	23 29	36.52	20.68	5.57	16 18	52.2		171.7	0 37.5	2.446 558	12188	3.60 4 52.0
	3	23 29	57.20	19.47	5.60	16 21	43.9		180.2	0 37.7	2.434 370	12101	3.61 4 48.4
	4	23 30	16.67	18.25	5.63	16 24	44.1		188.7	0 37.9	2.422 269	12009	3.63 4 44.8
	5	23 30	34.92	+ 17.01	- 5.66	-16 27	52.8		- 197.2	-0 38.2	2.410 260	-11914	3.65 4 41.1
	6	23 30	51.93	15.77	5.69	16 31	10.0		205.6	0 38.4	2.398 346	11814	3.67 4 37.5
	7	23 31	07.70	14.52	5.72	16 34	35.6		214.1	0 38.6	2.386 532	11711	3.69 4 33.8
	8	23 31	22.22	13.24	5.75	16 38	09.7		222.4	0 38.8	2.374 821	11604	3.71 4 30.1
	9	23 31	35.46	+ 11.98	5.78	16 41	52.1		230.7	0 38.9	2.363 217	-11493	3.72 4 26.4
	10	23 31	47.44		- 5.81	-16 45	42.8			-0 39.1	2.351 724		3.74 4 22.7

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 8.4

FOR 0^h UNIVERSAL TIME

FOR 0 ^h UNIVERSAL TIME														Transit, Meridian of Green- wich	
Date	Apparent Right Ascension				Red, to Astrom. Place	Apparent Declination				Red, to Astrom. Place	True Distance from Earth	Hor. Paral- lax			
	h	m	s	s	s	°	'	"	"	'	"		"	h	m
July 10	23	31	47.44	+ 10.69	- 5.81	-16	45	42.8	- 239.0	-0 39.1	2.351 724	-11378	3.74	4	22.7
11	23	31	58.13	9.39	5.84	16	49	41.8	247.1	0 39.3	2.340 346	11260	3.76	4	18.9
12	23	32	07.52	8.10	5.87	16	53	48.9	255.2	0 39.5	2.329 086	11138	3.78	4	15.1
13	23	32	15.62	6.78	5.90	16	58	04.1	263.2	0 39.7	2.317 948	11012	3.80	4	11.3
14	23	32	22.40	5.47	5.93	17	02	27.3	271.1	0 39.9	2.306 936	10883	3.81	4	07.5
15	23	32	27.87	+ 4.15	- 5.97	-17	06	58.4	- 279.0	-0 40.1	2.296 053	-10751	3.83	4	03.7
16*	23	32	32.02	2.81	6.00	17	11	37.4	286.6	0 40.2	2.285 302	10614	3.85	3	59.8
17	23	32	34.83	1.47	6.03	17	16	24.0	294.2	0 40.4	2.274 688	10475	3.87	3	55.9
18	23	32	36.30	+ 0.13	6.06	17	21	18.2	301.8	0 40.5	2.264 213	10331	3.89	3	52.0
19	23	32	36.43	- 1.22	6.09	17	26	20.0	309.2	0 40.7	2.253 882	10185	3.90	3	48.1
20	23	32	35.21	- 2.59	- 6.12	-17	31	29.2	- 316.4	-0 40.8	2.243 697	-10035	3.92	3	44.1
21	23	32	32.62	3.95	6.16	17	36	45.6	323.6	0 41.0	2.233 662	9881	3.94	3	40.1
22	23	32	28.67	5.33	6.19	17	42	09.2	330.6	0 41.1	2.223 781	9723	3.96	3	36.1
23	23	32	23.34	6.70	6.22	17	47	39.8	337.4	0 41.3	2.214 058	9561	3.97	3	32.1
24	23	32	16.64	8.09	6.25	17	53	17.2	344.1	0 41.4	2.204 497	9395	3.99	3	28.0
25	23	32	08.55	- 9.48	- 6.28	-17	59	01.3	- 350.7	-0 41.5	2.195 102	- 9224	4.01	3	24.0
26	23	31	59.07	10.87	6.31	18	04	52.0	356.9	0 41.7	2.185 878	9051	4.03	3	19.9
27	23	31	48.20	12.25	6.34	18	10	48.9	363.0	0 41.8	2.176 827	8871	4.04	3	15.8
28	23	31	35.95	13.65	6.37	18	16	51.9	368.8	0 41.9	2.167 956	8689	4.06	3	11.6
29	23	31	22.30	15.03	6.40	18	23	00.7	374.4	0 42.0	2.159 267	8502	4.08	3	07.5
30*	23	31	07.27	- 16.41	- 6.43	-18	29	15.1	- 379.7	-0 42.1	2.150 765	- 8311	4.09	3	03.3
Aug. 1	23	30	50.86	17.79	6.46	18	35	34.8	384.8	0 42.2	2.142 454	8115	4.11	2	59.1
2	23	30	33.07	19.15	6.49	18	41	59.6	389.5	0 42.3	2.134 339	7916	4.12	2	54.9
3	23	30	13.92	20.52	6.53	18	48	29.1	394.0	0 42.4	2.126 423	7712	4.14	2	50.6
4	23	29	53.40	21.86	6.56	18	55	03.1	398.1	0 42.4	2.118 711	7506	4.15	2	46.3
5	23	29	31.54	- 23.21	- 6.59	-19	01	41.2	- 401.9	-0 42.5	2.111 205	- 7294	4.17	2	42.0
6	23	29	08.33	24.53	6.62	19	08	23.1	405.4	0 42.6	2.103 911	7079	4.18	2	37.7
7	23	28	43.80	25.83	6.65	19	15	08.5	408.5	0 42.6	2.096 832	6860	4.20	2	33.4
8	23	28	17.97	27.12	6.67	19	21	57.0	411.2	0 42.7	2.089 972	6639	4.21	2	29.0
9	23	27	50.85	28.39	6.70	19	28	48.2	413.6	0 42.7	2.083 333	6413	4.22	2	24.6
10	23	27	22.46	- 29.64	- 6.73	-19	35	41.8	- 415.5	-0 42.8	2.076 920	- 6184	4.24	2	20.2
11	23	26	52.82	30.87	6.76	19	42	37.3	417.2	0 42.8	2.070 736	5953	4.25	2	15.8
12	23	26	21.95	32.08	6.79	19	49	34.5	418.4	0 42.8	2.064 783	5719	4.26	2	11.3
13*	23	25	49.87	33.25	6.82	19	56	32.9	419.3	0 42.8	2.059 064	5481	4.27	2	06.9
14	23	25	16.62	34.40	6.85	20	03	32.2	419.6	0 42.8	2.053 583	5242	4.29	2	02.4
15	23	24	42.22	- 35.54	- 6.87	-20	10	31.8	- 419.8	-0 42.8	2.048 341	- 5000	4.30	1	57.9
16	23	24	06.68	36.63	6.90	20	17	31.6	419.4	0 42.8	2.043 341	4755	4.31	1	53.4
17	23	23	30.05	37.70	6.93	20	24	31.0	418.6	0 42.8	2.038 586	4508	4.32	1	48.8
18	23	22	52.35	38.74	6.95	20	31	29.6	417.5	0 42.8	2.034 078	4258	4.33	1	44.3
19	23	22	13.61	39.76	6.98	20	38	27.1	416.0	0 42.8	2.029 820	4006	4.34	1	39.7
20	23	21	33.85	- 40.74	- 7.01	-20	45	23.1	- 414.1	-0 42.8	2.025 814	- 3752	4.34	1	35.1
21	23	20	53.11	41.68	7.03	20	52	17.2	411.8	0 42.7	2.022 062	3495	4.35	1	30.5
22	23	20	11.43	42.59	7.06	20	59	09.0	408.9	0 42.7	2.018 567	3236	4.36	1	25.9
23	23	19	28.84	43.46	7.08	21	05	57.9	405.8	0 42.6	2.015 331	2975	4.37	1	21.2
24	23	18	45.38	- 44.30	7.11	21	12	43.7	- 402.2	0 42.6	2.012 356	- 2711	4.37	1	16.6
25	23	18	01.08		- 7.13	-21	19	25.9		-0 42.5	2.009 645		4.38	1	11.9

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 8.1

FOR 0^h UNIVERSAL TIME

Date		Apparent Right Ascension		Red. to Astrom. Place	Apparent Declination		Red. to Astrom. Place	True Distance from Earth		Hor. Paral- lax	Transit, Meridian of Green- wich
		h m s s	s	s	° ' " "	"	' "			"	h m
Aug.	24	23 18 01.08	- 45.08	- 7.13	-21 19 25.9	- 398.1	-0 42.5	2.009 645	- 2445	4.38	1 11.9
	25	23 17 16.00	45.83	7.15	21 26 04.0	393.7	0 42.4	2.007 200	2177	4.38	1 07.2
	26*	23 16 30.17	46.53	7.18	21 32 37.7	388.7	0 42.4	2.005 023	1908	4.39	1 02.5
	27	23 15 43.64	47.18	7.20	21 39 06.4	383.4	0 42.3	2.003 115	1638	4.39	0 57.8
	28	23 14 56.46	47.79	7.22	21 45 29.8	377.6	0 42.2	2.001 477	1365	4.40	0 53.1
	29	23 14 08.67	- 48.35	- 7.24	-21 51 47.4	- 371.4	-0 42.1	2.000 112	- 1091	4.40	0 48.4
	30	23 13 20.32	48.85	7.26	21 57 58.8	364.7	0 42.0	1.999 021	817	4.40	0 43.7
	31	23 12 31.47	49.29	7.28	22 04 03.5	357.8	0 41.9	1.998 204	541	4.40	0 38.9
	Sept. 1	23 11 42.18	49.69	7.30	22 10 01.3	350.3	0 41.8	1.997 663	- 266	4.41	0 34.2
	2	23 10 52.49	50.03	7.32	22 15 51.6	342.5	0 41.6	1.997 397	+ 11	4.41	0 29.4
	3	23 10 02.46	- 50.32	- 7.34	-22 21 34.1	- 334.3	-0 41.5	1.997 408	+ 287	4.41	0 24.7
	4	23 09 12.14	50.54	7.35	22 27 08.4	325.7	0 41.4	1.997 695	564	4.41	0 19.9
	5	23 08 21.60	50.71	7.37	22 32 34.1	316.8	0 41.3	1.998 259	840	4.40	0 15.1
	6	23 07 30.89	50.82	7.39	22 37 50.9	307.6	0 41.1	1.999 099	1115	4.40	0 10.4
	7	23 06 40.07	50.88	7.40	22 42 58.5	298.0	0 41.0	2.000 214	1389	4.40	0 05.6
	8*	23 05 49.19	- 50.87	- 7.42	-22 47 56.5	- 288.1	-0 40.8	2.001 603	+ 1663	4.40	0 00.8
	9	23 04 58.32	50.81	7.43	22 52 44.6	278.1	0 40.7	2.003 266	1935	4.39	23 56.1
	10	23 04 07.51	50.70	7.44	22 57 22.7	267.7	0 40.5	2.005 201	2206	4.39	23 51.3
	11	23 03 16.81	50.53	7.46	23 01 50.4	257.0	0 40.4	2.007 407	2475	4.38	23 46.5
	12	23 02 26.28	50.31	7.47	23 06 07.4	246.3	0 40.2	2.009 882	2743	4.38	23 41.7
	13	23 01 35.97	- 50.03	- 7.48	-23 10 13.7	- 235.3	-0 40.0	2.012 625	+ 3009	4.37	23 32.2
	14	23 00 45.94	49.70	7.49	23 14 09.0	224.1	0 39.8	2.015 634	3273	4.37	23 27.4
	15	22 59 56.24	49.33	7.50	23 17 53.1	212.7	0 39.7	2.018 907	3536	4.36	23 22.7
	16	22 59 06.91	48.90	7.51	23 21 25.8	201.3	0 39.5	2.022 443	3797	4.35	23 18.0
	17	22 58 18.01	48.42	7.52	23 24 47.1	189.7	0 39.3	2.026 240	4056	4.34	23 13.2
	18	22 57 29.59	- 47.89	- 7.52	-23 27 56.8	- 177.9	-0 39.2	2.030 296	+ 4314	4.33	23 08.5
	19	22 56 41.70	47.31	7.53	23 30 54.7	166.0	0 39.0	2.034 610	4569	4.33	23 03.8
	20	22 55 54.39	46.69	7.54	23 33 40.7	154.0	0 38.8	2.039 179	4822	4.32	22 59.1
	21	22 55 07.70	46.01	7.54	23 36 14.7	142.0	0 38.6	2.044 001	5074	4.31	22 54.4
	22*	22 54 21.69	45.30	7.54	23 38 36.7	129.8	0 38.4	2.049 075	5322	4.29	22 49.7
	23	22 53 36.39	- 44.52	- 7.55	-23 40 46.5	- 117.6	-0 38.3	2.054 397	+ 5569	4.28	22 45.0
	24	22 52 51.87	43.71	7.55	23 42 44.1	105.3	0 38.1	2.059 966	5813	4.27	22 40.4
	25	22 52 08.16	42.85	7.55	23 44 29.4	93.0	0 37.9	2.065 779	6053	4.26	22 35.7
	26	22 51 25.31	41.95	7.56	23 46 02.4	80.6	0 37.7	2.071 832	6291	4.25	22 31.1
	27	22 50 43.36	41.01	7.56	23 47 23.0	68.3	0 37.5	2.078 123	6527	4.23	22 26.5
	28	22 50 02.35	- 40.02	- 7.55	-23 48 31.3	- 55.9	-0 37.3	2.084 650	+ 6758	4.22	22 21.9
	29	22 49 22.33	39.00	7.55	23 49 27.2	43.6	0 37.2	2.091 408	6987	4.21	22 17.3
	30	22 48 43.33	37.94	7.55	23 50 10.8	31.3	0 37.0	2.098 395	7212	4.19	22 12.7
	Oct. 1	22 48 05.39	36.84	7.55	23 50 42.1	19.0	0 36.8	2.105 607	7433	4.18	22 08.2
	2	22 47 28.55	35.71	7.55	23 51 01.1	6.8	0 36.6	2.113 040	7651	4.16	22 03.7
	3	22 46 52.84	- 34.55	- 7.55	-23 51 07.9	+ 5.4	-0 36.5	2.120 691	+ 7864	4.15	21 59.2
	4	22 46 18.29	33.35	7.54	23 51 02.5	17.4	0 36.3	2.128 555	8074	4.13	21 54.7
	5*	22 45 44.94	32.13	7.54	23 50 45.1	29.4	0 36.1	2.136 629	8280	4.12	21 50.2
	6	22 45 12.81	30.88	7.53	23 50 15.7	41.2	0 36.0	2.144 909	8480	4.10	21 45.8
	7	22 44 41.93	- 29.62	7.53	23 49 34.5	+ 53.0	0 35.8	2.153 389	+ 8677	4.09	21 41.4
	8	22 44 12.31		- 7.52	-23 48 41.5		-0 35.6	2.162 066		4.07	21 37.0

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 8.0

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension				Red. to Astrom. Place	Apparent Declination				Red. to Astrom. Place	True Distance from Earth		Hor. Paral- lax	Transit, Meridian of Green- wich
	h	m	s	s	s	°	'	"	"	'	"		"	h m
Oct. 8	22	44	12.31	- 28.32	- 7.52	- 23	48	41.5	+ 64.5	- 0	35.6	2.162 066	+ 8870	4.07 21 37.0
9	22	43	43.99	27.02	7.51	23	47	37.0	75.9	0	35.5	2.170 936	9059	4.05 21 32.6
10	22	43	16.97	25.69	7.50	23	46	21.1	87.2	0	35.3	2.179 995	9242	4.04 21 28.2
11	22	42	51.28	24.36	7.50	23	44	53.9	98.4	0	35.2	2.189 237	9423	4.02 21 23.9
12	22	42	26.92	23.01	7.49	23	43	15.5	109.3	0	35.0	2.198 660	9598	4.00 21 19.6
13	22	42	03.91	- 21.64	- 7.48	- 23	41	26.2	+ 120.1	- 0	34.9	2.208 258	+ 9771	3.98 21 15.3
14	22	41	42.27	20.28	7.47	23	39	26.1	130.7	0	34.8	2.218 029	9939	3.97 21 11.0
15	22	41	21.99	18.89	7.46	23	37	15.4	141.2	0	34.6	2.227 968	10104	3.95 21 06.7
16	22	41	03.10	17.50	7.45	23	34	54.2	151.5	0	34.5	2.238 072	10265	3.93 21 02.5
17	22	40	45.60	16.11	7.44	23	32	22.7	161.7	0	34.3	2.248 337	10421	3.91 20 58.3
18	22	40	29.49	- 14.71	- 7.43	- 23	29	41.0	+ 171.7	- 0	34.2	2.258 758	+ 10575	3.90 20 54.1
19*	22	40	14.78	13.31	7.42	23	26	49.3	181.6	0	34.1	2.269 333	10724	3.88 20 50.0
20	22	40	01.47	11.89	7.41	23	23	47.7	191.3	0	34.0	2.280 057	10870	3.86 20 45.9
21	22	39	49.58	10.48	7.39	23	20	36.4	200.8	0	33.9	2.290 927	11012	3.84 20 41.8
22	22	39	39.10	9.07	7.38	23	17	15.6	210.2	0	33.8	2.301 939	11149	3.82 20 37.7
23	22	39	30.03	- 7.66	- 7.37	- 23	13	45.4	+ 219.4	- 0	33.7	2.313 088	+ 11284	3.80 20 33.6
24	22	39	22.37	6.23	7.36	23	10	06.0	228.5	0	33.6	2.324 372	11414	3.79 20 29.6
25	22	39	16.14	4.82	7.34	23	06	17.5	237.5	0	33.5	2.335 786	11540	3.77 20 25.6
26	22	39	11.32	3.41	7.33	23	02	20.0	246.2	0	33.4	2.347 326	11662	3.75 20 21.6
27	22	39	07.91	1.99	7.31	22	58	13.8	254.9	0	33.3	2.358 988	11780	3.73 20 17.6
28	22	39	05.92	- 0.59	- 7.30	- 22	53	58.9	+ 263.4*	- 0	33.2	2.370 768	+ 11894	3.71 20 13.6
29	22	39	05.33	+ 0.82	7.29	22	49	35.5	271.7	0	33.1	2.382 662	12004	3.69 20 09.7
30	22	39	06.15	2.22	7.27	22	45	03.8	279.8	0	33.1	2.394 666	12110	3.67 20 05.8
31	22	39	08.37	3.62	7.26	22	40	24.0	287.9	0	33.0	2.406 776	12212	3.66 20 01.9
Nov. 1	22	39	11.99	5.00	7.24	22	35	36.1	295.8	0	33.0	2.418 988	12308	3.64 19 58.1
2*	22	39	16.99	+ 6.37	- 7.23	- 22	30	40.3	+ 303.5	- 0	32.9	2.431 296	+ 12401	3.62 19 54.3
3	22	39	23.36	7.74	7.21	22	25	36.8	311.0	0	32.8	2.443 697	12490	3.60 19 50.5
4	22	39	31.10	9.10	7.20	22	20	25.8	318.3	0	32.8	2.456 187	12574	3.58 19 46.7
5	22	39	40.20	10.44	7.18	22	15	07.5	325.6	0	32.7	2.468 761	12654	3.56 19 42.9
6	22	39	50.64	11.76	7.17	22	09	41.9	332.6	0	32.7	2.481 415	12731	3.55 19 39.2
7	22	40	02.40	+ 13.08	- 7.15	- 22	04	09.3	+ 339.5	- 0	32.7	2.494 146	+ 12803	3.53 19 35.5
8	22	40	15.48	14.38	7.14	21	58	29.8	346.2	0	32.6	2.506 949	12872	3.51 19 31.8
9	22	40	29.86	15.67	7.12	21	52	43.6	352.9	0	32.6	2.519 821	12937	3.49 19 28.1
10	22	40	45.53	16.93	7.11	21	46	50.7	359.2	0	32.5	2.532 758	13000	3.47 19 24.4
11	22	41	02.46	18.19	7.09	21	40	51.5	365.6	0	32.5	2.545 758	13058	3.46 19 20.8
12	22	41	20.65	+ 19.43	- 7.08	- 21	34	45.9	+ 371.7	- 0	32.5	2.558 816	+ 13113	3.44 19 17.2
13	22	41	40.08	20.66	7.06	21	28	34.2	377.8	0	32.5	2.571 929	13166	3.42 19 13.6
14	22	42	00.74	21.86	7.04	21	22	16.4	383.7	0	32.5	2.585 095	13214	3.40 19 10.0
15*	22	42	22.60	23.06	7.03	21	15	52.7	389.5	0	32.5	2.598 309	13261	3.39 19 06.5
16	22	42	45.66	24.24	7.02	21	09	23.2	395.3	0	32.5	2.611 570	13304	3.37 19 02.9
17	22	43	09.90	+ 25.40	- 7.00	- 21	02	47.9	+ 400.8	- 0	32.5	2.624 874	+ 13343	3.35 18 59.4
18	22	43	35.30	26.56	6.98	20	56	07.1	406.3	0	32.5	2.638 217	13380	3.34 18 55.9
19	22	44	01.86	27.70	6.97	20	49	20.8	411.7	0	32.5	2.651 597	13414	3.32 18 52.4
20	22	44	29.56	28.82	6.95	20	42	29.1	417.0	0	32.5	2.665 011	13445	3.30 18 49.0
21	22	44	58.38	+ 29.92	6.94	20	35	32.1	+ 422.2	0	32.5	2.678 456	+ 13472	3.29 18 45.5
22	22	45	28.30		- 6.92	- 20	28	29.9		- 0	32.5	2.691 928		3.27 18 42.1

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 8.3

FOR 0^h UNIVERSAL TIME

Date	Apparent Right Ascension	Red. to Astrom. Place	Apparent Declination	Red. to Astrom. Place	True Distance from Earth	Hor. Paral- lax	Transit, Meridian of Green- wich
	h m s s	s	° ' " "	' "		"	h m
Nov. 22	22 45 28.30 + 31.03	- 6.92	-20 28 29.9 + 427.3	-0 32.5	2.691 928 +13496	3.27	18 42.1
23	22 45 59.33 32.10	6.91	20 21 22.6 432.4	0 32.5	2.705 424 13518	3.25	18 38.7
24	22 46 31.43 33.17	6.90	20 14 10.2 437.2	0 32.5	2.718 942 13537	3.24	18 35.3
25	22 47 04.60 34.23	6.88	20 06 53.0 442.1	0 32.6	2.732 479 13551	3.22	18 32.0
26	22 47 38.83 35.26	6.86	19 59 30.9 446.9	0 32.6	2.746 030 13564	3.20	18 28.6
27	22 48 14.09 + 36.29	- 6.85	-19 52 04.0 + 451.6	-0 32.6	2.759 594 +13572	3.19	18 25.3
28	22 48 50.38 37.29	6.83	19 44 32.4 456.1	0 32.7	2.773 166 13577	3.17	18 22.0
29*	22 49 27.67 38.30	6.82	19 36 56.3 460.6	0 32.7	2.786 743 13580	3.16	18 18.7
30	22 50 05.97 39.27	6.81	19 29 15.7 465.0	0 32.8	2.800 323 13578	3.14	18 15.4
Dec. 1	22 50 45.24 40.23	6.79	19 21 30.7 469.3	0 32.8	2.813 901 13573	3.13	18 12.1
2	22 51 25.47 + 41.18	- 6.78	-19 13 41.4 + 473.5	-0 32.8	2.827 474 +13567	3.11	18 08.8
3	22 52 06.65 42.11	6.77	19 05 47.9 477.6	0 32.9	2.841 041 13555	3.10	18 05.6
4	22 52 48.76 43.03	6.75	18 57 50.3 481.7	0 32.9	2.854 596 13543	3.08	18 02.4
5	22 53 31.79 43.92	6.74	18 49 48.6 485.5	0 33.0	2.868 139 13526	3.07	17 59.2
6	22 54 15.71 44.80	6.73	18 41 43.1 489.4	0 33.0	2.881 665 13507	3.05	17 56.0
7	22 55 00.51 + 45.66	- 6.71	-18 33 33.7 + 493.2	-0 33.1	2.895 172 +13486	3.04	17 52.8
8	22 55 46.17 46.50	6.70	18 25 20.5 496.8	0 33.1	2.908 658 13463	3.03	17 49.6
9	22 56 32.67 47.34	6.69	18 17 03.7 500.5	0 33.2	2.922 121 13437	3.01	17 46.5
10	22 57 20.01 48.16	6.68	18 08 43.2 503.9	0 33.2	2.935 558 13410	3.00	17 43.4
11	22 58 08.17 48.96	6.66	18 00 19.3 507.4	0 33.3	2.948 968 13379	2.98	17 40.2
12	22 58 57.13 + 49.74	- 6.65	-17 51 51.9 + 510.9	-0 33.4	2.962 347 +13347	2.97	17 37.1
13*	22 59 46.87 50.52	6.64	17 43 21.0 514.1	0 33.4	2.975 694 13312	2.96	17 34.0
14	23 00 37.39 51.28	6.63	17 34 46.9 517.4	0 33.5	2.989 006 13276	2.94	17 30.9
15	23 01 28.67 52.02	6.61	17 26 09.5 520.7	0 33.5	3.002 282 13238	2.93	17 27.9
16	23 02 20.69 52.76	6.60	17 17 28.8 523.9	0 33.6	3.015 520 13198	2.92	17 24.8
17	23 03 13.45 + 53.49	- 6.59	-17 08 44.9 + 527.0	-0 33.7	3.028 718 +13154	2.91	17 21.8
18	23 04 06.94 54.19	6.58	16 59 57.9 530.0	0 33.8	3.041 872 13111	2.89	17 18.7
19	23 05 01.13 54.89	6.57	16 51 07.9 533.0	0 33.8	3.054 983 13063	2.88	17 15.7
20	23 05 56.02 55.58	6.56	16 42 14.9 536.0	0 33.9	3.068 046 13015	2.87	17 12.7
21	23 06 51.60 56.25	6.54	16 33 18.9 539.0	0 34.0	3.081 061 12964	2.86	17 09.7
22	23 07 47.85 + 56.92	- 6.53	-16 24 19.9 + 541.8	-0 34.1	3.094 025 +12910	2.84	17 06.7
23	23 08 44.77 57.57	6.52	16 15 18.1 544.6	0 34.1	3.106 935 12856	2.83	17 03.7
24	23 09 42.34 58.22	6.51	16 06 13.5 547.4	0 34.2	3.119 791 12798	2.82	17 00.7
25	23 10 40.56 58.85	6.50	15 57 06.1 550.2	0 34.3	3.132 589 12739	2.81	16 57.8
26	23 11 39.41 59.47	6.49	15 47 55.9 552.8	0 34.4	3.145 328 12676	2.80	16 54.8
27*	23 12 38.88 + 60.08	- 6.48	-15 38 43.1 + 555.4	-0 34.4	3.158 004 +12612	2.79	16 51.9
28	23 13 38.96 60.68	6.47	15 29 27.7 558.0	0 34.5	3.170 616 12545	2.78	16 49.0
29	23 14 39.64 61.27	6.46	15 20 09.7 560.5	0 34.6	3.183 161 12476	2.76	16 46.0
30	23 15 40.91 61.84	6.45	15 10 49.2 563.0	0 34.7	3.195 637 12405	2.75	16 43.1
31	23 16 42.75 + 62.40	6.45	15 01 26.2 + 565.3	0 34.7	3.208 042 +12332	2.74	16 40.2
32	23 17 45.15	- 6.44	-14 52 00.9	-0 34.8	3.220 374	2.73	16 37.3

*Lunar inequality is a maximum in Right Ascension.

Approximate magnitude = 8.6